User Manual

MFD-CP4
Power supply/ Communication module

10/04 AWB2528-1548GB

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Warning!
Dangerous electrical voltage!

Before commencing the installation

- Disconnect the power supply of the device.
- Ensure that devices cannot be accidentally restarted.
- Verify isolation from the supply.
- Earth and short circuit.
- Cover or enclose neighbouring units that are live.
- Follow the engineering instructions (AWA) of the device concerned.
- Only suitably qualified personnel in accordance with EN 50110-1/-2 (VDE 0105 Part 100) may work on this device/system.
- Before installation and before touching the device ensure that you are free of electrostatic charge.
- The functional earth (FE) must be connected to the protective earth (PE) or to the potential equalisation. The system installer is responsible for implementing this connection.
- Connecting cables and signal lines should be installed so that inductive or capacitive interference does not impair the automation functions.
- Install automation devices and related operating elements in such a way that they are well protected against unintentional operation.
- Suitable safety hardware and software measures should be implemented for the I/O interface so that a line or wire breakage on the signal side does not result in undefined states in the automation devices.
- Ensure a reliable electrical isolation of the low voltage for the 24 volt supply. Only use power supply units complying with IEC 60364-4-41 (VDE 0100 Part 410) or HD 384.4.41 S2.
- Deviations of the mains voltage from the rated value must not exceed the tolerance limits given in the specifications, otherwise this may cause malfunction and dangerous operation.
- Emergency stop devices complying with IEC/EN 60204-1 must be effective in all operating modes of the automation devices. Unlatching the emergency-stop devices must not cause restart.
- Devices that are designed for mounting in housings or control cabinets must only be operated and controlled after they have been installed with the housing closed. Desktop or portable units must only be operated and controlled in enclosed housings.

- Measures should be taken to ensure the proper restart of programs interrupted after a voltage dip or failure. This should not cause dangerous operating states even for a short time. If necessary, emergency-stop devices should be implemented.
- Wherever faults in the automation system may cause damage to persons or property, external measures must be implemented to ensure a safe operating state in the event of a fault or malfunction (for example, by means of separate limit switches, mechanical interlocks etc.).

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About This Manual

This manual describes the installation, commissioning and possible settings on the display/operator system.

Explanation of terms

The display/operator system described here consists of the MFD-CP4 power supply/communication module, the MFD-80.. display/operator unit and an MFD-CP4-...-CAB connection cable for the easy basic units.

If the display/operator system is connected with an easy basic unit it, can be used to read the text and status display of the basic unit or operate the basic unit remotely via the keypad.

The following tables shows the individual components of the display/operator system with their type designations. Components that can be ordered are indicated by a grey background.

Table 1: Components of the display/operator system with type designation and possible order combinations

Display/ operator unit	Power supply unit/ communication module	Connection cable to easy basic unit
MFD-80 MFD-80-B		
	MFD-CP4	
		MFD-CP4-500-CAB5/ MFD-CP4-800-CAB5
	MFD-CP4-500 or MFD-CP4-800	

Other manuals

The MFD-CP4 can be connected to easy500, easy700, easy800 or MFD-CP8... basic units.

These easy basic units are described in separate manuals (AWBs):

- easy500/700 (AWB2528-1508GB)
- easy800 (AWB2528-1423GB)
- MFD-Titan, multi-function display (AWB2528-1480GB).

All manuals can be downloaded as PDF files from the Internet. To find the manual quickly, enter the documentation number at http://www.moeller.net/support.

Writing conventions

Symbols used in this manual have the following meanings:

▶ Indicates actions to be taken.

Attention!
Warns of the possibility of slight damage.

Caution!
Warns of the possibility of serious damage and slight injury.

Warning!
Warns of the possibility of substantial damage, serious injury or death.

Indicates interesting tips and additional information

For greater clarity, the name of the current chapter is shown in the header of the left-hand page and the name of the current section in the header of the right-hand page. This does not apply to pages at the start of a chapter and empty pages at the end of a chapter.

1 About the Display/Operator System

Target readership

The MFD-CP4 must only be installed and connected up by trained electricians or persons familiar with the installation of electrical equipment.

A specialist knowledge of electrical engineering is needed for commissioning. When controlling active components such as motors or pressure cylinders, parts of the system can be damaged and persons put at risk if the MFD-CP4 is connected or programmed incorrectly.

Proper use

The MFD-CP4 must be properly installed before use.

- The MFD-80/MFD-80-B display and operator unit is protected to IP65 and does not normally require any special housing protection.
- The rear of the MFD-CP4 unit is designed as a mounting unit and must be installed in an enclosure, control cabinet or a service distribution board.
- The installation must comply with regulations for electromagnetic compatibility (EMC).
- The power up of the MFD-CP4 must not cause any hazards arising from activated devices, such as unexpected motor startups or power ups.

Overview

The display/operator system can be connected with easy500, easy700, easy800 or MFD-CP8... basic units to implement the following tasks:

- Display on the MFD-CP4 of the status or text display of the connected basic unit.
- Remote operation of the connected basic unit via the MFD-CP4 keypad.

The devices can be linked together easily via the serial interface.

If the display/operator system is connected to an easy basic unit in the EASY-NET network, it is also possible to operate any other device in the EASY-NET via the display/operator unit and display its status, regardless of the device in the EASY-NET to which the display/operator system is connected.

Legend for figure 1:

① easy500 basic units
② easy700 basic units
③ MFD80-B/MFD-80 multi-function display
④ Power supply/communication module with MFD-CP4-500 (above) or MFD-CP4-800 (below) connection cable
⑤ easy800 basic units

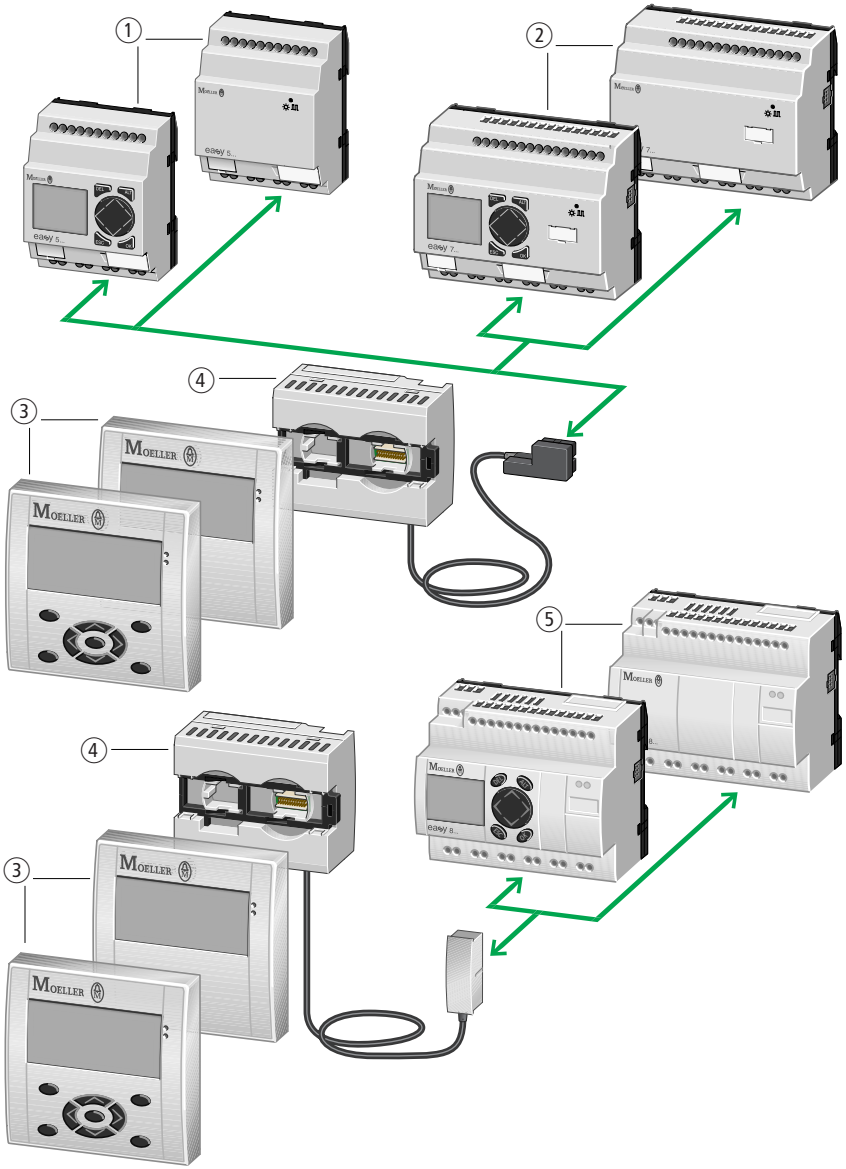


Figure 1: System overview (Legend → page 6)

Display/operator system at a glance

The display/operator system consists of the power supply unit/communication module and the display/operator unit

Display and operator unit

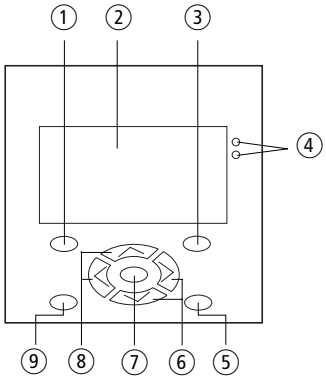


Figure 2: Display/operator unit

1. DEL button
2. Graphic display
3. ALT button
4. LEDs for signalling
5. Mode button
6. Right, down cursor buttons
7. OK button
8. Left, up cursor buttons
9. ESC button

Power supply/communication module

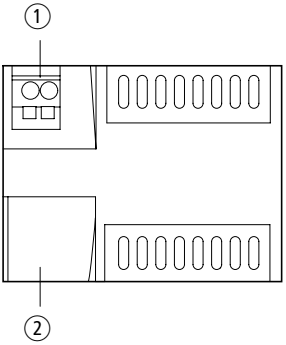


Figure 3: Power supply/communication module

① Power supply

② Serial interface for point-to-point connection

Type references

MFD - CP4 - XXX

Supplied
connection cable for interface (optional)
500 = MFD-CP4-500-CAB5
800 = MFD-CP4-800-CAB5

CP4 = Power supply/
CPU rating 4

Multi-function display

Operating principles

The buttons of the display/operator unit have the following functions:

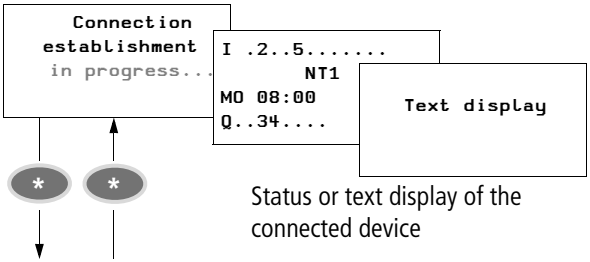
OK
Go to next menu level
Select menu item
Activate, modify, save your entry

ESC
Return to last menu level
Cancel your entry since the last **OK**

∧ ∨ Change menu item
Change value
〈 〉 Change place

*
Toggle between Terminal mode and main menu.

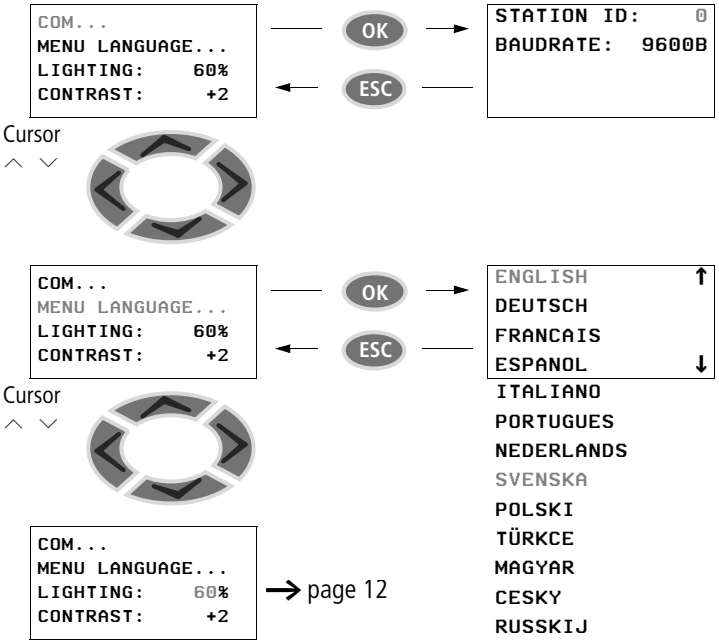
Main menu **Status display**



Status or text display of the connected device

Main menu

Current selection flashes in the MFD-CP4 menu



Setting values

Selection mode:
Black rectangle flashing

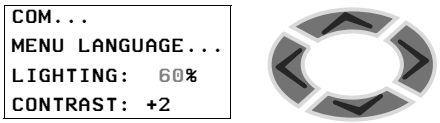
or

ESC

Entry mode:
Number flashing

Press **OK** to toggle between Selection and Entry modes.

Press **OK** or **ESC** to move from Entry mode to Selection mode of the main menu



Change value

The result of the value change is immediately visible

Special function

ALT + ESC

If the remotely operated device is an MFD device in graphic mode, this button combination can be used to close the graphic mode on this device. The "*" button on the remotely operated MFD device has the same local function when pressed.

2 Installation

The MFD-CP4 must only be installed and connected up by trained electricians or a person familiar with the installation of electrical equipment.

The MFD-CP4 is installed in the following order:

- Mounting,
- Connecting the serial interface,
- Connecting the power supply.

Mounting

Install the display/operator unit in the front of a control cabinet, a service distribution board, operator panel or in an enclosure. You can protect the display/operator unit with a protective membrane or cover, depending on the environment in which it is to be used. This must be fitted before the MFD-CP4 is mounted and is therefore described in the next section.

The MFD-CP4 power supply/communication module must be mounted in such a way that all the terminals are protected against direct contact, liquids and dust during operation.

For sufficient heat circulation around the device, the rear of the MFD-CP4 and the terminals must have a clearance of at least 3 cm from the wall or adjacent devices.

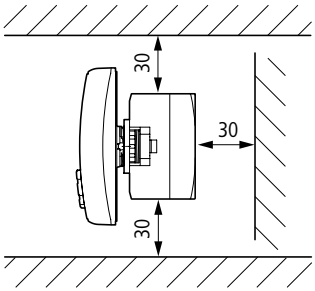


Figure 4: Minimum clearance to MFD-CP4

Fitting the protective membrane

For special applications such as in the food industry, the operator unit must be protected against the ingress of dust, liquids etc. In this case fit the protective membrane over the display/operator unit.

→ Fit the protective membrane before mounting the display/ operator unit.

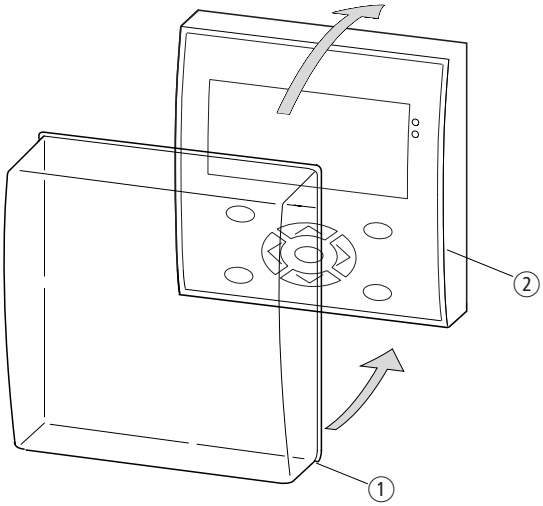


Figure 5: Fitting the protective membrane

① Protective membrane

② Display and operator unit

Caution!

Ensure that the membrane fits snugly in the groove of the display/operator unit.

Otherwise a proper seal cannot be guaranteed and particles may enter underneath the membrane. This may cause malfunctions in the keypad.

In food industry applications, there is the risk of bacteria building up underneath the membrane.

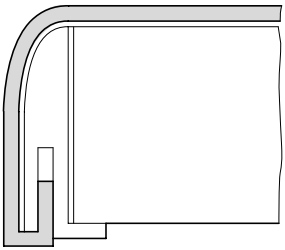


Figure 6: Correct position of the protective membrane

→ If the protective membrane has to be replaced, the display/operator unit has to be removed. Replace the membrane and refit the device.

Mounting the protective cover

The protective cover is provided for using the device in aggressive environments. This protects the display and the operator unit against mechanical damage or destruction. Protection to IP 65 is maintained.

The protective cover can be opened so that the operator buttons can be used.

The protective cover can be closed with a sealing facility to provide protection against unauthorised operation.

→ Fit the protective cover before mounting the display/operator unit.

▶ First remove the front frame before mounting.

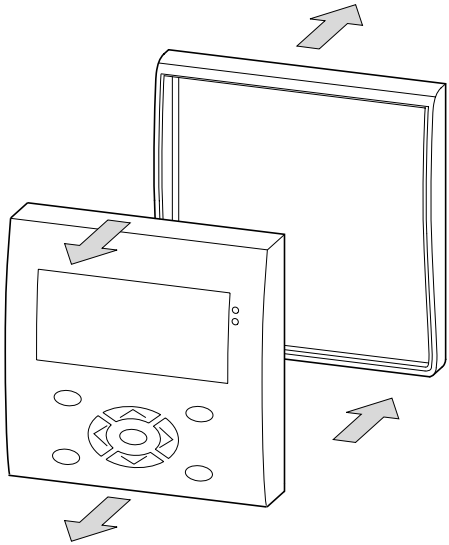


Figure 7: Removing the front frame

The protective cover can be mounted in two different positions.

▶ Choose the position that is most suitable for the application at hand and your requirements.

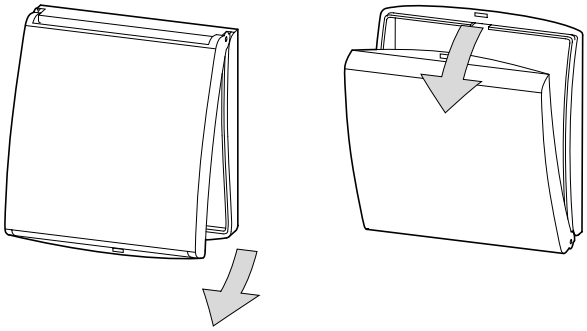


Figure 8: Position of the protective cover

▶ Mount the protective cover as shown in the figure.

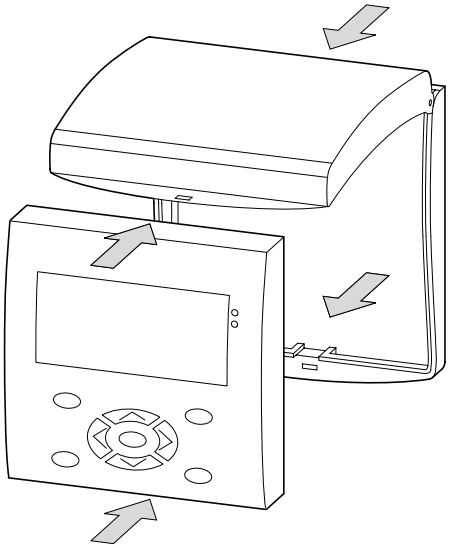


Figure 9: Mounting the protective cover

Sealing the protective cover

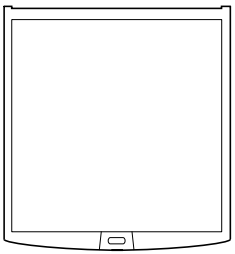


Figure 10: Sealing the protective cover

The grip handle of the protective cover is provided with holes that can be used in any mounting position. You can fit a wire or similar material through these holes in order to seal the cover. The cover is sealed properly if the wire is provided with a lead seal. The cover can then only be opened by breaking the seal or the wire.

Mounting the display/operator unit (front mounting)

→ The protective membrane or the protective cover must be fitted beforehand.

▶ Drill and punch out two 22.5 mm diameter holes in the front plate. The diameter is the same as is normally required for control circuit devices.

→ Observe the following technical requirements:

- The hole spacing is 30 mm.
- The maximum thickness of the front plate for mounting the power supply/CPU module must not be more than 6 mm.
- Ensure minimum clearances for the power supply/CPU module → page 14
- In order to ensure protection to IP 65, the surface of the mounting front must be even and smooth.

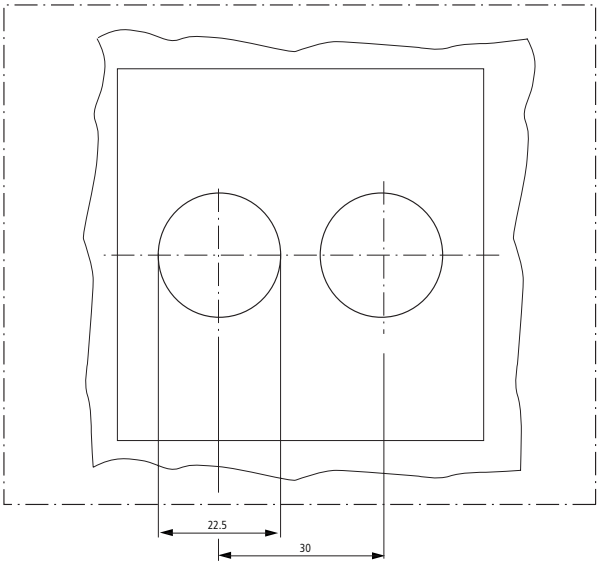


Figure 11: Drill holes for the MFD

▶ Fit the display/operator unit in the punched fixing holes.

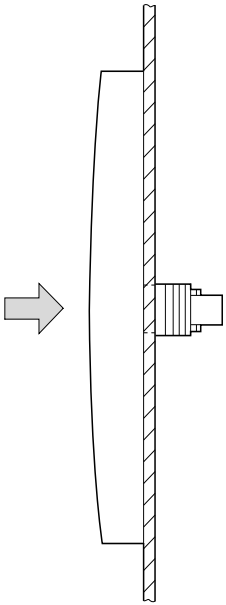


Figure 12: Mounting the display/operator unit

▶ Tighten the display/operator unit with the M22-MS combination box spanner (→ Figure 13).

The tightening torque must be between 1.2 and 2 Nm

→ Ensure that the correct torque is used. If the tightening torque is too low or high, this may impair the seal.

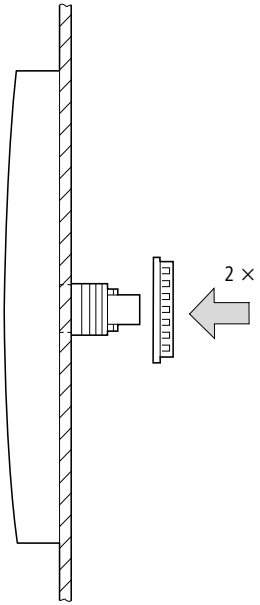


Figure 13: Screw fastening the display/operator unit

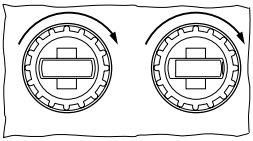


Figure 14: Rear of the mounted display/operator unit

Removing the display/operator unit (front mounting)

▶ Unscrew the fixing element and remove the display/operator unit.

Mounting the power supply/communication module

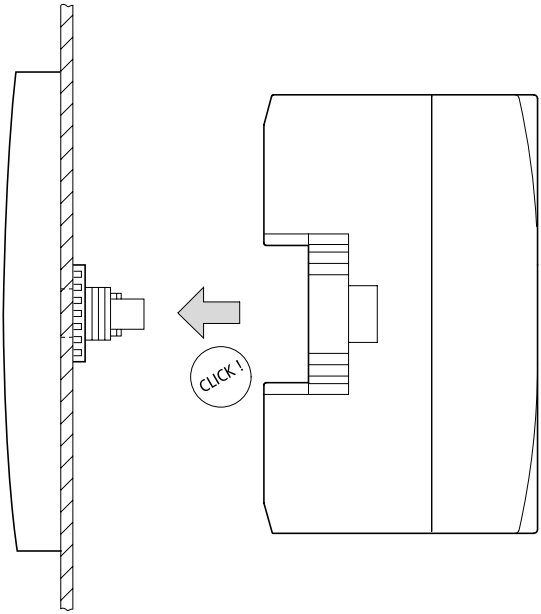


Figure 15: Mounting the power supply/communication module

Removing the power supply/communication module

Use a screwdriver with a 100 x 3.5 mm slot width.

- ▶ Insert the screwdriver into the lug of the fixing shaft catch. [1]
- ▶ Lever out the slide catch. [2]
- ▶ Pull out the power supply/CPU module from the fixing shafts. [3]

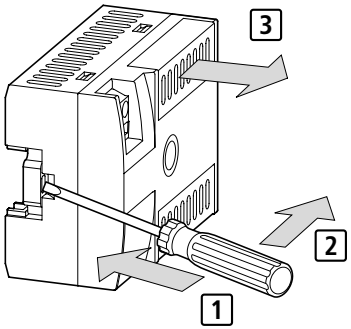


Figure 16: Releasing the fixing shaft

Terminals

Terminals

The MFD-CP4 is fitted with cage clamp terminals for connecting the power supply and the connection cable to the serial interface.

Tool for cage clamp terminals
Slot-head screwdriver, width 3.5 mm x 0.6 mm.

Connection cross-sections of the MFD cage clamp terminal cables

- Power supply terminal:
  0.08 to 2.5 mm^2 (AWG 28 – 12)
- Interface terminal
  0.14 to 0.5 mm^2 (AWG 26 – 20)

Connecting the power supply

→ The required connection data for the MFD-CP4 is provided in the Section "Technical data", Page 40.

DC power supply MFD-CP4

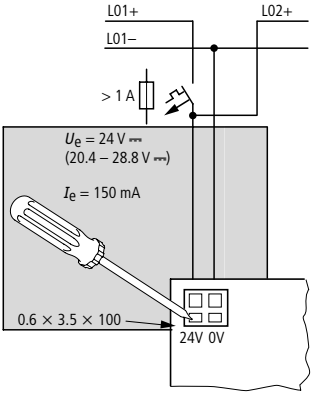


Figure 17: Power supply on the MFD

→ The MFD-CP4 is protected against polarity reversal. Ensure the correct polarity of the terminals to ensure that the MFD-CP4 functions correctly.

Cable protection

Provide cable protection (F1) of at least 1 A (slow) on the MFD-CP4.

→ When the MFD-CP4 is switched on for the first time, its power supply circuit behaves like a capacitor. Use a suitable device for switching on the power supply and do not use any reed relay contacts or proximity switches.

With the power supply ensure that the response threshold for the short-circuit current is higher than the inrush current of the MFD-CP4.

Connecting the connection cable

The MFD-CP4 is provided with a serial interface. This is used for point-to-point communication between the MFD-CP4 and an easy500, easy700, easy800 or MFD-CP8.. if there is no PC connected to these devices.

Selecting a suitable connection cable
Different connection cables are required depending on which device is connected to the MFD-CP4:

Table 2: Selecting connection cables

MFD-CP4 connected to ...	Connection cable
easy500 (from device version 01)	MFD-CP4-500-CAB5
easy700 (from device version 01)	
easy800 (from device version 04)	MFD-CP4-800-CAB5
MFD-CP8.. (from device version 01)	
MFD-AC-CP8.. (from device version 01)	

The MFD-CP4-500-CAB5 and MFD-CP4-800-CAB5 connection cables are 5 m long.

In order to ensure correct EMC, the MFD-CP4-500-CAB5 and MFD-CP4-800-CAB5 connection cables must not be lengthened.

Connecting the connection cable

- ▶ Remove the interface cover carefully. [1]
- ▶ Use a screwdriver to press down the recess next to the terminal [2] and connect the wires of the connection cable to the terminals in the order stated [3] . Proceed accordingly in the reverse order to remove the connection cable [4] .
- ▶ Refit the interface cover. [5]

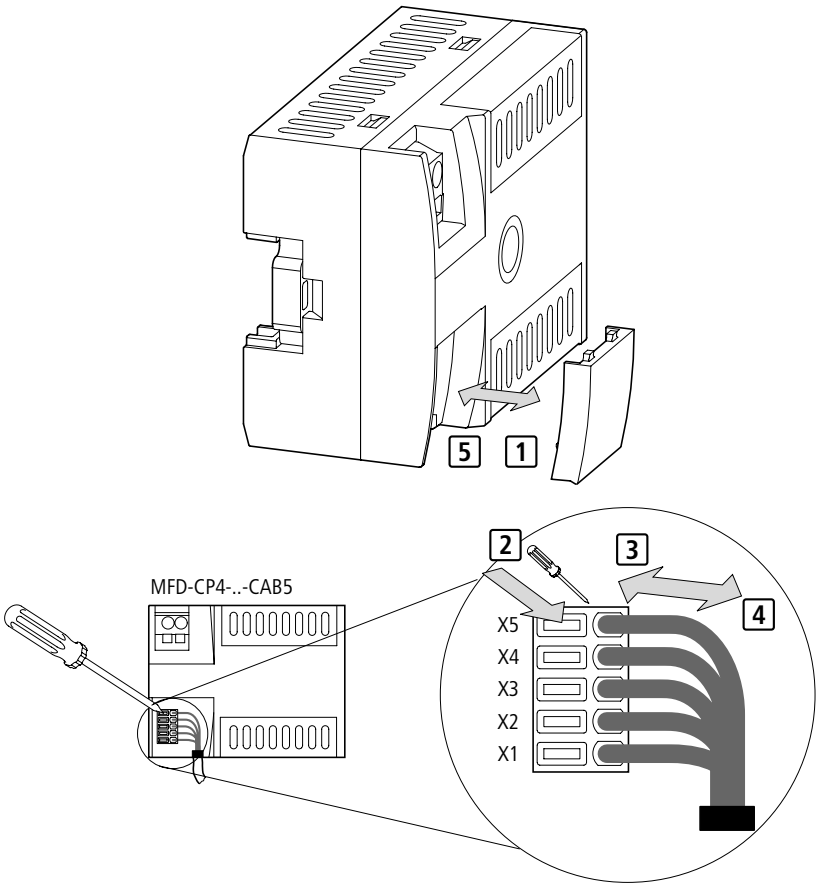


Figure 18: Connecting the connection cable

X1 = grey, X2 = brown, X3 = yellow, X4 = white, X5 = green

▶ Fit the connection cable plug into the easy basic unit.

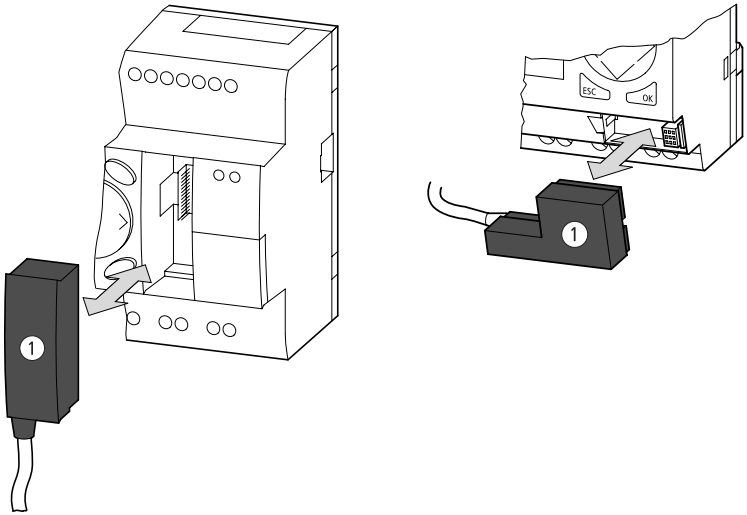


Figure 19: Fitting the connection plug ① to the easy basic unit
Left:easy800/MFD, right: easy500/700

3 Commissioning

Switching on

Before switching on check that the power supply and the connection cable are properly connected:

- Terminal +24 V: voltage +24 V
- Terminal 0 V: voltage 0 V

If you have already integrated devices into a system, secure any parts of the system connected to the working area to prevent access and ensure that no-one can be injured if, for example, motors start up unexpectedly.

Caution!
The MFD-CP4 allows you to operate a device that may be positioned far from your actual location. All access rights that you would also require "locally" are granted to you. It is not always possible to obtain a view of the situation "locally". Use of this operating mode and the execution of any changes to device settings should only be carried out with the utmost caution.

You can also carry out settings locally on the device whilst you are operating a device remotely via the keypad. In this case, the local operation on the device is always faster than the remote operation in Terminal mode. Bear in mind that this may lead to conflicts that may trigger faults or unforeseen events.

A MFD-CP4 makes its display and operator unit available to the connected device. Only data for the display and the status of the buttons is sent via the connection. This ensures that the local data of the connected device is not destroyed in the event of a communication fault.

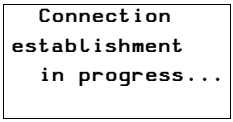
Initial Commissioning

When you switch on the display/operator system for the first time, you will be asked to select the menu language.

- ▶ Select the required menu language and confirm the setting by pressing the OK button.
- ▶ Press ESC to exit language selection.

If you do not set the language, the display/operator system will display this language menu every time you switch on, and wait for you to select a language.

You can change the language setting at a later time as required, (see → Section "Setting the menu language", Page 36).



If the device was switched on for the first time, the display/operator system will try to establish a connection with the default settings to a connected device. The status and text display of the remotely operated device is displayed as soon as the connection can be established.

4 Use

You can use the display/operating system for a point-to-point connection or in the easy-NET network. easy-NET operation is only possible in combination with easy800/MFD devices.

Point-to-point connection

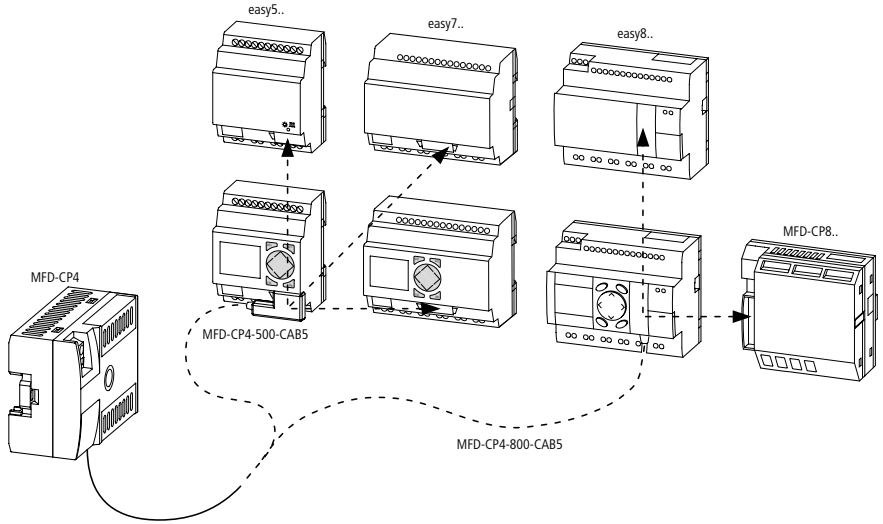
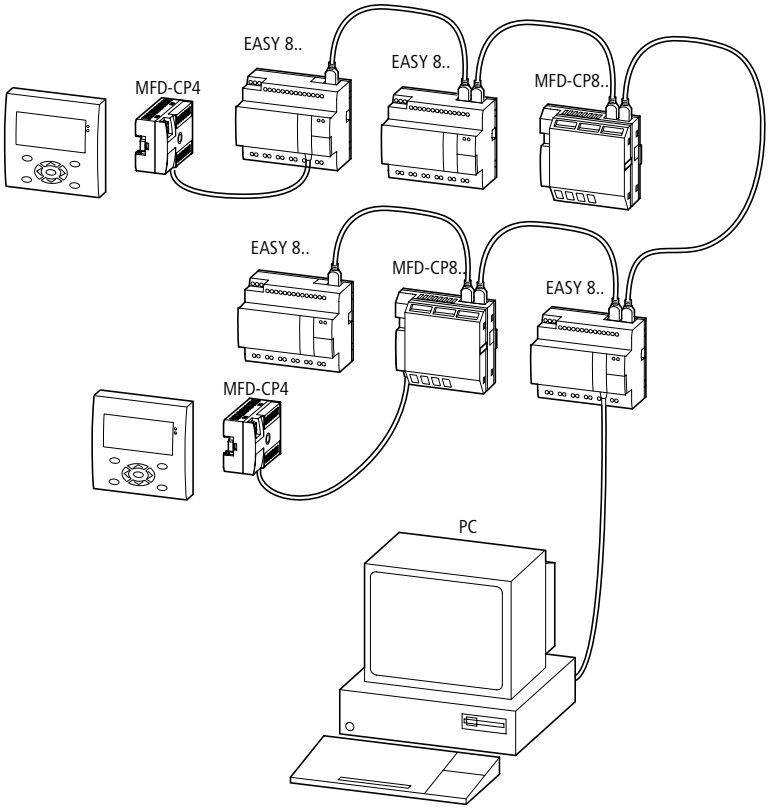


Figure 20: Possible point-to-point connection via the serial interface

Net operation



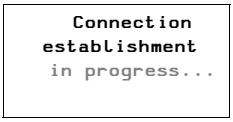
→ Communication via EASY-SOFT is not possible if a network station (easy800 or MFD-CP8) is connected with a PC and an MFD-CP4 is accessing this device. This also applies to program uploads and downloads.

To enable communication simply set a different station ID in the main menu of the CP4 in the COM menu (→ page 11).

→ Avoid data conflicts between the connected devices!

Connection faulty

If the connection is faulty or interrupted, the MFD-CP4 will display the message "Connection establishment in progress..." continuously. This message may, however, also be due to an incorrect COM setting (→ section "Main menu", page 11).



Graphic mode on the remotely operated device

If the display/operator system is connected with another MFD device which is in Graphic mode, this graphic will not be shown by the display/operator system. You can terminate graphic mode from the display/operator system by pressing ALT + ESC. The same thing can be achieved by pressing the "*" button on the remotely operated MFD device as long another function was not assigned to this button (→ section "Special function", page 12).

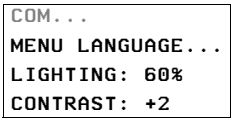
5 Settings

The following settings to the connected basic unit can be made via the display/operator system.

Station selection

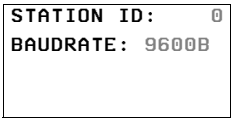
Pressing the "*" activates the main menu of the display/operator system.

▶ Press the "*" button.



The main menu will appear.

▶ Select the COM menu item and press the **OK** button.

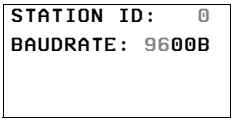


The Station ID menu will appear.

▶ Press the **OK** button and select the station number with ∧ and ∨.

▶ Confirm with **OK**.

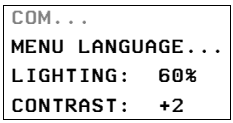
→ Station ID 0 is always assigned to the device directly connected via the interface. All other station IDs are assigned to the NET-IDs of the individual NET stations in an EASY-NET.



▶ Press the **OK** button and select the baud rate using ∧ and ∨.

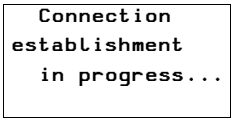
▶ Confirm with **OK**.

→ The transfer rate for easy500 and easy700 is limited to 9600 baud. The maximum baud rate for easy800 and MFD-CP8 is 19200 baud.



▶ Exit the COM menu with **ESC**.

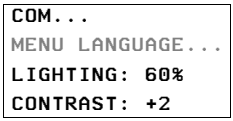
You can leave the main menu at any time by pressing the "*" button.



When the main menu is left, the MFD-CP4 tries to establish connection to the selected device. The status and text display of the remotely operated device is displayed as soon as the connection can be established.

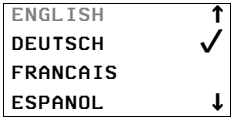
Setting the menu language

If the main menu of the display/operator system is not active, press the "*" button to enter the menu.



▶ Use the ∧ and ∨ buttons to select the Menu language menu item.

▶ Confirm with **OK**.



▶ Use the cursor buttons ∧ or ∨ to select the language required.

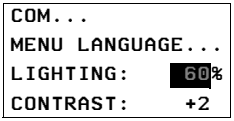
- English
- German
- French
- Spanish
- Italian
- Portuguese
- Dutch
- Swedish
- Polish
- Turkish
- Hungarian
- Czech
- Russian

▶ Press **OK** to confirm your choice and press **ESC** to exit the menu.

You can leave the main menu at any time by pressing the "*" button.

Changing the lighting

If the main menu of the display/operator system is not active, press the "*" button to enter the menu.

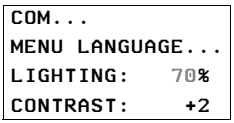


▶ Use the ∧ and ∨ buttons to select the Lighting menu item.

The cursor moves to the percentage value of the lighting.

When Selection mode is active, the cursor appears as black flashing rectangle. Pressing **OK** will activate Edit mode in which the cursor will disappear and the number will flash. In Edit mode, use the ∧ and ∨ to change the value. The changes are displayed immediately.

▶ Press **OK**.



Now change the value in 10% steps with the ∧ and ∨.

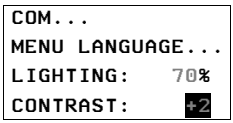
▶ Press the ∧ or ∨ buttons to change the value.

▶ Press **OK** or **ESC** to exit Edit mode

If Selection mode is active, you can exit the main menu at any time by pressing the "*" button.

Changing the contrast

If the main menu of the display/operator system is not active, press the "*" button to enter the menu.

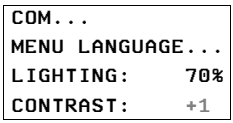


▶ Use the ∧ and ∨ buttons to select the Contrast menu item.

The cursor moves to the percentage value of the contrast.

When Selection mode is active, the cursor appears as black flashing rectangle. Pressing OK will activate Edit mode in which the cursor will disappear and the number will flash. In Edit mode, use the ∧ and ∨ to change the value. The changes are displayed immediately.

▶ Confirm with **OK**.



Use the ∧ and ∨ buttons to change the value between -2 and +2 in increments of 1.

▶ Press the ∧ or ∨ buttons to change the value.

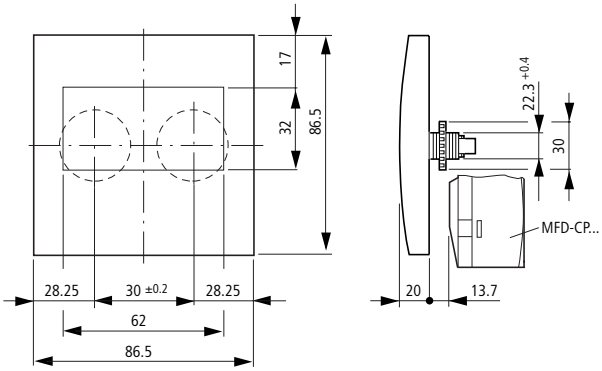
▶ Press **OK** or **ESC** to exit Edit mode

If Selection mode is active, you can exit the main menu at any time by pressing the "*" button.

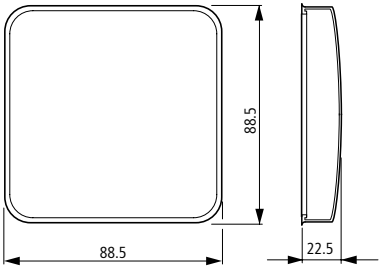
6 Appendix

Dimensions

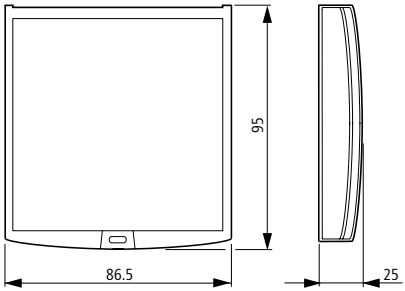
MFD-80.. display/operator unit



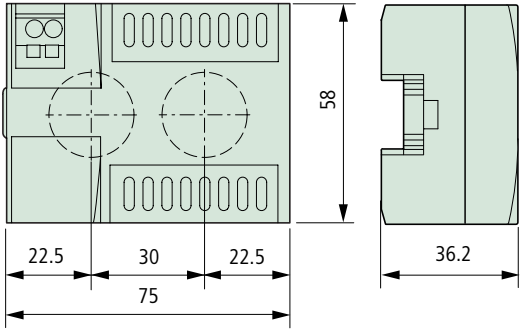
MFD-80-XM protective membrane



MFD-80-XS protective cover



MFD-CP4 power supply/communication module



Technical data General ambient conditions

Climatic conditions (damp heat constant to IEC 60068-2-78; cyclical to IEC 600618-2-30) (cold to IEC 60068-2-1, heat to IEC 60068-2-2)		
Ambient temperature Installed horizontally/vertically	°C, (°F)	–25 to 55, (–13 to 131)
Condensation		Prevent condensation with suitable measures
Display legibility	°C, (°F)	–5 to 50, (–23 to 122)
Storage/transport temperature	°C, (°F)	–40 to 70, (–40 to 158)
Relative humidity (IEC 60068-2-30), non-condensing	%	5 to 95
Air pressure (operation)	hPa	795 to 1080

Ambient mechanical conditions			
Pollution degree			
Power supply/CPU module			2
Display/operator unit			3
Degree of protection (EN 50178, IEC 60529, VBG4)			
Power supply/CPU module			IP20
Display/operator unit			IP65
Display/operator unit with protective cover			IP65
Display/operator unit with protective membrane			IP65
Oscillations (IEC 60068-2-6)			
Constant amplitude 0.15 mm		Hz	10 to 57
Constant acceleration 2 g		Hz	57 to 150
Shocks (IEC 60068-2-27) semi-sinusoidal 15 g/11 ms		Shocks	18
Drop (IEC 60068-2-31)	Drop height	mm	50
Free fall, when packed (IEC 60068-2-32)		m	1
Electromagnetic compatibility (EMC)			
Electrostatic discharge (ESD), (IEC/EN 61000-4-2, severity level 3)			
Air discharge		kV	8
Contact discharge		kV	6
Electromagnetic fields (RFI), (IEC/EN 61000-4-3)		V/m	10
Radio interference suppression (EN 55011, EN 55022), limit class			B
Burst (IEC/EN 61000-4-4, severity level 3)			
Power cables		kV	2
Signal cables		kV	2
High energy pulses (Surge) MFD (IEC/EN 61000-4-5, severity level 2), power cable symmetrical		kV	1
Line-conducted interference (IEC/EN 61000-4-6)		V	10

Dielectric strength		
Overvoltage category		II
Measurement of the air clearance and creepage distance		EN 50178, UL 508, CSA C22.2, No 142
Dielectric strength		EN 50178
Tools and cable cross-sections		
Power supply terminal		
Solid and flexible with ferrule, minimum to maximum	mm^2	0.08 to 2.5
	AWG	28 to 12
Interface terminal		
Flexible, tin-coated, minimum to maximum	mm^2	0.14 to 0.5
	AWG	26 to 20
Slot-head screwdriver, width	mm	3.5 × 0.5
	inch	0.14 × 0.02

MFD-80.. display/operator unit

Front dimensions W × H × D		
With buttons	mm	86.5 × 86.5 × 21.5
	inches	3.41 × 3.41 × 0.85
Without buttons	mm	86.5 × 86.5 × 20
	inches	3.41 × 3.41 × 0.79
Overall dimensions with fixing shaft W × H × D		
With buttons	mm	86.5 × 86.5 × 43
	inches	3.41 × 3.41 × 1.69
Thickness of fixing wall (minimum; maximum)	mm	1; 6
	inches	0.04; 0.24
Weight	g	130
	lb	0.287

Mounting		2 22.5 mm (0.886 in) holes Display fastened with two fixing rings
Maximum tightening torque of the fixing rings [Nm]		1.2 to 2
Power supply		By means of MFD-CP4 power supply/communication module
LCD display		
Type		Graphic/monochrome
Visible area W x H	mm	62 x 33
Size of pixels	mm	0.4 x 0.4
Number of pixels (W x H)		132 x 64
Spacing (pixel centre to pixel centre)	mm	0.42
LCD backlight		Yes
Backlight colour		Yellow/green
The backlight can be used and programmed in visualization applications		Yes
LEDs		
Number of LEDs		2
Operating buttons		
Number		9
Pushbutton illumination (LED)		
Number		5
Colour		Green

MFD-XM-80 protective membrane

Dimensions W × H × D	mm	88 × 88 × 25
	inches	3.46 × 3.46 × 0.98
Weight	g	25
	lb	0.055
Mounting		Is fitted over the display/keypad (with Titan front ring)

MFD-80-XS protective cover

Dimensions W × H × D	mm	86.5 × 94 × 25
	inches	3.41 × 3.41 × 0.98
Weight	g	36
	lb	0.079
Mounting		Is fitted over the display/keypad (without Titan front ring)

MFD-CP4 power supply/communication module

Dimensions W × H × D	mm	75 × 58 × 36.2
	inches	2.95 × 2.28 × 1.43
Weight	g	164
	lb	0.362
Mounting		Fitted on the fixing shaft of the display
Power supply		
Rated voltage		
Rated value	V DC, (%)	24, (+20, –15)
Permissible range	V DC	20.4 to 28.8
Residual ripple	%	≦ 5
Input current		
with 24 V DC, MFD-CP4, MFD-80.., normally	mA	150
Voltage dips, IEC/ EN 61131-2	ms	10
Heat dissipation		
with 24 V DC, MFD-CP4, MFD-80.., normally	W	3.6

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